



**THE 8TH NAFISAT SUPERVISORY COMMITTEE MEETING
MAHE, SEYCHELLES, 25-26 MARCH 2013**

Agenda Item 7: Matters Arising

7.1 Review of Network Operation and Performance

AFTN Transit Time Statistics

(Presented by the Secretariat)

SUMMARY
<p>This working paper presents Transit Times Statistics as reported by one AFI Main AFTN Centre and one AFTN Tributary Centre, and requests NAFISAT States' ANSPs to submit their AFTN centres quarterly transit time statistics to the ICAO Regional Office, and conduct investigations as necessary for appropriate remedial action to avoid/minimize congestion resulting in longer message transit times.</p>
<p>References:</p> <ul style="list-style-type: none"> • Manual on the Planning and Engineering of the Aeronautical Fixed Telecommunication Network (AFTN) (ICAO Doc 8259) • AFI Air Navigation Plan (ICAO Doc 7474)

1. INTRODUCTION

1.1 The AFI Air Navigation Plan recommends that the AFTN COM Centres, as part of their monitoring functions, prepare traffic statistics for the messages transmitted through the network. The statistics will allow, among other things, the network supervisor to configure the network to meet the message traffic demand in order to avoid/minimize congestion resulting in longer message transit times. The average congestion delay suffered by a message awaiting access to a channel for its transmission is given by:

$$t = w \times T / (1 - w)$$

where:

t is the average congestion delay experienced by messages throughout the hour;

w is the channel occupancy factor;

T is the time required by the channel to transmit a message, which is inversely proportional to the channel modulation rate in bits/s.

1.2 The above expression shows a strong dependency between the congestion delay time and the channel occupancy factor¹.

1.3 The message transit time is defined as “the elapsed time between the instant of filing of a message with an AFTN station for transmission on the network and the instant that it is made available to the addressee”.

1.4 The AFS should be designed so as to meet operational requirements for transit time: in the peak season of the year, even in the average peak hours, at least 95 per cent of the messages should achieve transit times of less than 5 minutes (FF and above) and 10 minutes (GG). The 95 per cent does not mean that the remaining 5 per cent may experience any delay; actually, the administrations should investigate if there is excess of delay and should try to avoid its occurrence.

2. DISCUSSION

2.1 In order to allow for the regular assessment of AFTN performance, APIRG/14 Meeting (June 2003) requested States to establish quarterly transit time statistics for their AFTN centres on 23 January, 23 April, 23 July and 23 October.

2.2 Only a very limited number of States have implemented this requirement, making it difficult to identify the root causes for the very long delays being experienced in the dissemination of AFTN messages (such as FPL, OPMET, NOTAM, etc.).

2.3 **Appendices A and B** to this working paper show January 2013 Transit Time Statistics provided by Johannesburg AFTN Centre and October 2012 Transit Time Statistics provided by Mogadishu AFTN Centre.

3. CONCLUSION

3.1.1 The NAFISAT Supervisory Committee is invited:

- a) to review and discuss the statistical data provided in Appendices A and B to this paper, and
- b) request NAFISAT ANSPs to:
 - 1) submit their AFTN centres quarterly transit time statistics to the ICAO Regional Office; and
 - 2) conduct investigations as necessary for appropriate remedial action in coordination with their correspondents to avoid/minimize congestion resulting in longer message transit times.

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¹ As the occupancy factor increases to values higher than 0.4 (40 per cent), the delay grows rapidly and tends to infinity when the occupancy factor approaches unity. The way to reduce delay is to decrease T, i.e. to increase the modulation rate of the AFTN channel or circuit.

Appendix A

AFTN Transit Time Statistics – January 2013

Johannesburg

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
YBBB	YBBB	FF and above	8	10	9	1	1
YBBB	YBBB	GG	93	10	1	1	1
VTBB	YBBB	FF and above	5	5	1	1	1
VTBB	YBBB	GG	2614	5	4	1	1
VTBB	HKNA	FF and above	0	10	0	0	0
VTBB	HKNA	GG	31	10	5	2	1
VTBB	GOOO	FF and above	0	10	0	0	0
VTBB	GOOO	GG	62	10	5	2	1
RJAA	YBBB	FF and above	0	5	0	0	0
RJAA	YBBB	GG	55	5	1	1	1
RCTP	YBBB	FF and above	0	5	0	0	0
RCTP	YBBB	GG	10	5	1	1	1
ZBBB	YBBB	FF and above	7	10	4	4	1
ZBBB	YBBB	GG	41	10	5	4	1
RKRR	YBBB	FF and above	0	10	0	0	0
RKRR	YBBB	GG	2	10	1	1	1
VRMM	YBBB	FF and above	2	10	1	1	1
VRMM	YBBB	GG	52	10	3	1	1
VECC	YBBB	FF and above	0	10	0	0	0
VECC	YBBB	GG	4	10	5	4	1
VECC	HKNA	FF and above	0	10	0	0	0
VECC	HKNA	GG	11	10	1259	1103	1
WMKK	YBBB	FF and above	0	10	0	0	0
WMKK	YBBB	GG	9	10	1	1	1

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
WSSS	YBBB	FF and above	2	10	1	1	1
WSSS	YBBB	GG	7	10	1	1	1
WSSS	LEEE	FF and above	3	10	1	1	1
WSSS	LEEE	GG	0	10	0	0	0
WSSS	HKJK	FF and above	1142	10	1	1	1
WSSS	HKJK	GG	16	10	3	1	1
VYYY	YBBB	FF and above	0	10	0	0	0
VYYY	YBBB	GG	2	10	1	1	1
AYPM	YBBB	FF and above	0	10	0	0	0
AYPM	YBBB	GG	4	10	1	1	1
VIDP	YBBB	FF and above	0	10	0	0	0
VIDP	YBBB	GG	1	10	5	5	1
VIDP	HKNA	FF and above	0	10	0	0	0
VIDP	HKNA	GG	2	10	3	3	1
VIDP	GOOO	FF and above	0	10	0	0	0
VIDP	GOOO	GG	3	10	5	3	1
VTBS	YBBB	FF and above	1	10	16	16	1
VTBS	YBBB	GG	0	10	0	0	0
YMMM	YBBB	FF and above	8	10	1	1	1
YMMM	YBBB	GG	0	10	0	0	0
VCCC	YBBB	FF and above	0	10	0	0	0
VCCC	YBBB	GG	1	10	1	1	1
VHHH	YBBB	FF and above	6	10	1	1	1
VHHH	YBBB	GG	1	10	1	1	1
YSSY	YBBB	FF and above	4	10	1	1	1
YSSY	YBBB	GG	0	10	0	0	0
FVHA	FVHA	FF and above	5	10	79	1	1
FVHA	FVHA	GG	0	10	0	0	0

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
FVBU	FVHA	FF and above	1	10	130	130	1
FVBU	FVHA	GG	0	10	0	0	0
LEEE	LEEE	FF and above	1	10	1	1	1
LEEE	LEEE	GG	0	10	0	0	0
KHOU	LEEE	FF and above	6	10	1	1	1
KHOU	LEEE	GG	0	10	0	0	0
EBBB	LEEE	FF and above	4	10	1	1	1
EBBB	LEEE	GG	83	10	1	1	1
KDZZ	LEEE	FF and above	3	10	5	1	1
KDZZ	LEEE	GG	99	10	11	1	1
KATL	LEEE	FF and above	9	10	1	1	1
KATL	LEEE	GG	0	10	0	0	0
EUEC	LEEE	FF and above	0	10	0	0	0
EUEC	LEEE	GG	309	10	1	1	1
EUCH	LEEE	FF and above	26	10	1	1	1
EUCH	LEEE	GG	0	10	0	0	0
EDDF	LEEE	FF and above	7	10	13	1	1
EDDF	LEEE	GG	0	10	0	0	0
UUUU	LEEE	FF and above	0	10	0	0	0
UUUU	LEEE	GG	70	10	1	1	1
LOWW	LEEE	FF and above	0	10	0	0	0
LOWW	LEEE	GG	21	10	7	6	1
GVAC	LEEE	FF and above	0	10	0	0	0
GVAC	LEEE	GG	5	10	2	2	1
OTBD	LEEE	FF and above	3	10	1	1	1
OTBD	LEEE	GG	0	10	0	0	0
KATH	LEEE	FF and above	4	10	1	1	1
KATH	LEEE	GG	0	10	0	0	0

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
LTBA	LEEE	FF and above	6	10	1	1	1
LTBA	LEEE	GG	0	10	0	0	0
SMJP	LEEE	FF and above	0	10	0	0	0
SMJP	LEEE	GG	7	10	1	1	1
OAKB	LEEE	FF and above	6	10	1	1	1
OAKB	LEEE	GG	0	10	0	0	0
LSSN	LEEE	FF and above	0	10	0	0	0
LSSN	LEEE	GG	5	10	1	1	1
ORBI	LEEE	FF and above	0	10	0	0	0
ORBI	LEEE	GG	1	10	14	14	1
LKPR	LEEE	FF and above	0	10	0	0	0
LKPR	LEEE	GG	3	10	1	1	1
KDEN	LEEE	FF and above	2	10	1	1	1
KDEN	LEEE	GG	0	10	0	0	0
EUCB	LEEE	FF and above	35	10	1	1	1
EUCB	LEEE	GG	0	10	0	0	0
MHTG	LEEE	FF and above	0	10	0	0	0
MHTG	LEEE	GG	6	10	2	1	1
EHAM	LEEE	FF and above	2	10	1	1	1
EHAM	LEEE	GG	0	10	0	0	0
EHAM	GOOO	FF and above	1	10	1	1	1
EHAM	GOOO	GG	0	10	0	0	0
EGLL	LEEE	FF and above	4	10	1	1	1
EGLL	LEEE	GG	0	10	0	0	0
EGLL		FF and above	220	10	38	6	1
EGLL		GG	0	10	0	0	0
EGKK	LEEE	FF and above	5	10	1	1	1
EGKK	LEEE	GG	0	10	0	0	0

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
EBBR	LEEE	FF and above	1	10	1	1	1
EBBR	LEEE	GG	0	10	0	0	0
CYYZ	LEEE	FF and above	1	10	1	1	1
CYYZ	LEEE	GG	0	10	0	0	0
LPPT	LEEE	FF and above	2	10	1	1	1
LPPT	LEEE	GG	0	10	0	0	0
EKBI	LEEE	FF and above	1	10	1	1	1
EKBI	LEEE	GG	0	10	0	0	0
LSZH	LEEE	FF and above	1	10	1	1	1
LSZH	LEEE	GG	0	10	0	0	0
FSSS	FSIA	FF and above	7	10	1	1	1
FSSS	FSIA	GG	0	10	0	0	0
FSIA	FSIA	FF and above	2	10	1	1	1
FSIA	FSIA	GG	0	10	0	0	0
FCCC	FCCC	FF and above	2	10	1	1	1
FCCC	FCCC	GG	9	10	75	1	1
FCCC	GOOO	FF and above	1	10	1	1	1
FCCC	GOOO	GG	32	10	2	1	2
FZAA	FCCC	FF and above	13	10	513	2	1
FZAA	FCCC	GG	52	10	521	2	1
FZAA	GOOO	FF and above	1	10	2	2	1
FZAA	GOOO	GG	18	10	3	2	1
FMMI	FCCC	FF and above	0	10	0	0	0
FMMI	FCCC	GG	18	10	1	1	1
FMMI	HKNA	FF and above	0	10	0	0	0
FMMI	HKNA	GG	17	10	1	1	1
FMMI	GOOO	FF and above	0	10	0	0	0
FMMI	GOOO	GG	25	10	1	1	1

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
FMMI	FMMI	FF and above	60	10	1	1	1
FMMI	FMMI	GG	76	10	1	1	1
FMMI	FMMM	FF and above	38	10	79	1	1
FMMI	FMMM	GG	49	10	49	1	1
FCBB	FCCC	FF and above	17	10	3	2	1
FCBB	FCCC	GG	6	10	3	2	1
FCBB	GOOO	FF and above	9	10	3	2	1
FCBB	GOOO	GG	3	10	2	2	1
DNAA	FCCC	FF and above	0	10	0	0	0
DNAA	FCCC	GG	22	10	39	8	1
DNAA	GOOO	FF and above	0	10	0	0	0
DNAA	GOOO	GG	7	10	21	10	1
HSSS	FCCC	FF and above	2	10	4	4	1
HSSS	FCCC	GG	28	10	44	2	1
HSSS	GOOO	FF and above	0	10	0	0	0
HSSS	GOOO	GG	17	10	36	1	1
DGAA	FCCC	FF and above	2	10	1	1	1
DGAA	FCCC	GG	0	10	0	0	0
FCBV	FCCC	FF and above	0	10	0	0	0
FCBV	FCCC	GG	1	10	1	1	1
HLLL	FCCC	FF and above	0	10	0	0	0
HLLL	FCCC	GG	2	10	1	1	1
FYWE	FYWH	FF and above	40	10	2462	1	1
FYWE	FYWH	GG	2	10	1	1	1
FYWH	FYWH	FF and above	9	10	6	1	1
FYWH	FYWH	GG	0	10	0	0	0
FYWB	FYWH	FF and above	7	10	5	5	1
FYWB	FYWH	GG	0	10	0	0	0

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
FLLS	FLLS	FF and above	27	10	39	3	1
FLLS	FLLS	GG	38	10	15	1	1
FLLI	FLLS	FF and above	2	10	1330	1330	1
FLLI	FLLS	GG	17	10	797	138	1
FQMA	FQMA	FF and above	20	10	1	1	1
FQMA	FQMA	GG	1	10	8	8	1
FQVL	FQMA	FF and above	9	10	1	1	1
FQVL	FQMA	GG	2	10	1	1	1
FQBR	FQBR	FF and above	1	10	2879	2879	1
FQBR	FQBR	GG	16	10	23	1	1
FQPB	FQBR	FF and above	3	10	1	1	1
FQPB	FQBR	GG	0	10	0	0	0
FQTT	FQBR	FF and above	2	10	1	1	1
FQTT	FQBR	GG	0	10	0	0	0
SAEZ	SAEZ	FF and above	18	10	117	5	1
SAEZ	SAEZ	GG	399	10	2	1	1
HKJK	HKNA	FF and above	16	10	1	1	1
HKJK	HKNA	GG	341	10	1	1	1
HKNA	HKNA	FF and above	1	10	1	1	1
HKNA	HKNA	GG	156	10	1	1	1
HKNA	GOOO	FF and above	0	10	0	0	0
HKNA	GOOO	GG	150	10	2	1	1
HECA	HKNA	FF and above	2	10	1	1	1
HECA	HKNA	GG	37	10	3	3	1
HECA	GOOO	FF and above	0	10	0	0	0
HECA	GOOO	GG	28	10	3	3	1
HKMO	HKNA	FF and above	1	10	1	1	1
HKMO	HKNA	GG	0	10	0	0	0

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
LLBG	HKNA	FF and above	3	10	1	1	1
LLBG	HKNA	GG	9	10	1	1	1
LLAD	HKNA	FF and above	3	10	1	1	1
LLAD	HKNA	GG	7	10	1	1	1
HUEN	HKNA	FF and above	2	10	1	1	1
HUEN	HKNA	GG	0	10	0	0	0
HKNW	HKNA	FF and above	2	10	1	1	1
HKNW	HKNA	GG	0	10	0	0	0
FAPR	HKNA	FF and above	0	10	0	0	0
FAPR	HKNA	GG	42	10	36	2	1
FAPR	GOOO	FF and above	0	10	0	0	0
FAPR	GOOO	GG	42	10	36	2	1
HAAB	HKNA	FF and above	0	10	0	0	0
HAAB	HKNA	GG	4	10	2	2	1
HAAB	GOOO	FF and above	0	10	0	0	0
HAAB	GOOO	GG	16	10	3	2	1
GMMC	HKNA	FF and above	0	10	0	0	0
GMMC	HKNA	GG	5	10	30	3	1
GMMC	GOOO	FF and above	1	10	1	1	1
GMMC	GOOO	GG	5	10	31	3	1
LGGG	HKNA	FF and above	0	10	0	0	0
LGGG	HKNA	GG	21	10	584	482	1
OSDI	HKNA	FF and above	0	10	0	0	0
OSDI	HKNA	GG	2	10	1	1	1
VABB	HKNA	FF and above	1	10	3	3	1
VABB	HKNA	GG	0	10	0	0	0
VABF	HKNA	FF and above	2	10	1	1	1
VABF	HKNA	GG	0	10	0	0	0

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
HTDA	HKNA	FF and above	0	10	0	0	0
HTDA	HKNA	GG	1	10	45	45	1
HTDA	HTDA	FF and above	34	10	2925	59	1
HTDA	HTDA	GG	85	10	2841	1061	1
LFPW	G000	FF and above	40	10	1	1	1
LFPW	G000	GG	554	10	1	1	1
GOOY	G000	FF and above	23	10	4	3	1
GOOY	G000	GG	170	10	1	1	1
DAAA	G000	FF and above	0	10	0	0	0
DAAA	G000	GG	71	10	1	1	1
DRRN	G000	FF and above	0	10	0	0	0
DRRN	G000	GG	107	10	1	1	1
OMDB	G000	FF and above	32	10	1	1	1
OMDB	G000	GG	0	10	0	0	0
OBBB	G000	FF and above	0	10	0	0	0
OBBB	G000	GG	1	10	1	1	1
SBGR	G000	FF and above	7	10	1	1	1
SBGR	G000	GG	0	10	0	0	0
LFPG	G000	FF and above	17	10	19	1	1
LFPG	G000	GG	0	10	0	0	0
OYSN	G000	FF and above	1	10	39	39	1
OYSN	G000	GG	1	10	1	1	1
DIAP	G000	FF and above	10	10	282	38	1
DIAP	G000	GG	2	10	1	1	1
DRRR	G000	FF and above	6	10	1	1	1
DRRR	G000	GG	27	10	1	1	1
G000	G000	FF and above	5	10	11	10	1
G000	G000	GG	1	10	2877	2877	1

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
LIRF	G000	FF and above	4	10	1	1	1
LIRF	G000	GG	0	10	0	0	0
SBAO	G000	FF and above	1	10	1	1	1
SBAO	G000	GG	0	10	0	0	0
OMAE	G000	FF and above	0	10	0	0	0
OMAE	G000	GG	5	10	1	1	1
OIII	G000	FF and above	0	10	0	0	0
OIII	G000	GG	12	10	1	1	1
LIIA	G000	FF and above	0	10	0	0	0
LIIA	G000	GG	30	10	1	1	1
OOMS	G000	FF and above	0	10	0	0	0
OOMS	G000	GG	4	10	1	1	1
LFFA	G000	FF and above	0	10	0	0	0
LFFA	G000	GG	42	10	1	1	1
OKNO	G000	FF and above	0	10	0	0	0
OKNO	G000	GG	1	10	1	1	1
OEJD	G000	FF and above	0	10	0	0	0
OEJD	G000	GG	2	10	1	1	1
OLBA	G000	FF and above	0	10	0	0	0
OLBA	G000	GG	1	10	4	4	1
DTTC	G000	FF and above	0	10	0	0	0
DTTC	G000	GG	10	10	1	1	1
SBBR	G000	FF and above	3	10	1	1	1
SBBR	G000	GG	0	10	0	0	0
DAAS	G000	FF and above	7	10	7	3	1
DAAS	G000	GG	0	10	0	0	0
OPKC	G000	FF and above	0	10	0	0	0
OPKC	G000	GG	1	10	1	1	1

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
FZAB	GOOO	FF and above	0	10	0	0	0
FZAB	GOOO	GG	2	10	7749	7749	1
HAAA	GOOO	FF and above	3	10	3	3	1
HAAA	GOOO	GG	0	10	0	0	0
FBSK	FBSK	FF and above	80	10	2	1	1
FBSK	FBSK	GG	2	10	1	1	1
FBMN	FBSK	FF and above	0	10	0	0	0
FBMN	FBSK	GG	1	10	1	1	1
FBFT	FBSK	FF and above	3	10	3	2	1
FBFT	FBSK	GG	0	10	0	0	0
FBGR	FBSK	FF and above	3	10	2	2	1
FBGR	FBSK	GG	0	10	0	0	0
FIMP	FIMP	FF and above	7	10	1	1	1
FIMP	FIMP	GG	36	10	14	2	1
FMEE	FIMP	FF and above	0	10	0	0	0
FMEE	FIMP	GG	37	10	19	1	1
HRYR	HRYR	FF and above	1	10	1	1	1
HRYR	HRYR	GG	43	10	3	2	1
FMMM	FMMI	FF and above	21	10	1	1	1
FMMM	FMMI	GG	16	10	24	5	1
FMMM	FMMM	FF and above	18	10	10	1	1
FMMM	FMMM	GG	22	10	52	12	1
FMMD	FMMI	FF and above	1	10	24	24	1
FMMD	FMMI	GG	0	10	0	0	0
FALA		FF and above	2	10	1	1	1
FALA		GG	0	10	0	0	0
FAGM		FF and above	14	10	2	1	1
FAGM		GG	0	10	0	0	0

Station of Origin	Station received from	Message Priority group	Number of messages	Prescribed Transit Time	Highest Transit Time	Median Transit Time	Maximum Relay Time
FAWB		FF and above	18	10	3	1	1
FAWB		GG	0	10	0	0	0
FAPP		FF and above	4	10	1	1	1
FAPP		GG	0	10	0	0	0
FAGC		FF and above	13	10	2	1	1
FAGC		GG	0	10	0	0	0
FAPM		FF and above	15	10	3	1	1
FAPM		GG	0	10	0	0	0
FAGG		FF and above	4	10	1	1	1
FAGG		GG	0	10	0	0	0
FAOR		FF and above	3	10	1	1	1
FAOR		GG	0	10	0	0	0
FAPN		FF and above	1	10	1	1	1
FAPN		GG	0	10	0	0	0
FACT		FF and above	1	10	3	3	1
FACT		GG	0	10	0	0	0
FNLU	FNLU	FF and above	8	10	1	1	1
FNLU	FNLU	GG	64	10	657	1	1
HBBA	HBBA	FF and above	2	10	10	10	1
HBBA	HBBA	GG	12	10	648	3	1
FDMS	FDMM	FF and above	3	10	1	1	1
FDMS	FDMM	GG	17	10	2	1	1
FWKI	FWLL	FF and above	4	10	1	1	1
FWKI	FWLL	GG	0	10	0	0	0

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Appendix B

AFTN Transit Time Statistics – October 2012

Mogadishu

Station of Origin	Stations Received from	Transit Time Prescribed by ICAO (Minutes)	Highest Transit Time Experienced (Minutes)
Bangkok (VTBB)	HKNA	10	630
Addis Ababa (HAAB)	HKNA	10	319
Dubai (OMDB)	HKNA	05	23
Wilson Airport Nairobi (HKNW)	HKNA	10	17
Khartoum (HSSS)	HKNA	05	26
Bujumbura (HBBA)	HKNA	05	20
Aden (OYAC)	HKNA	05	43
Lusaka (FLLS)	HKNA	05	283
Dar es Salaam (HTDA)	HKNA	05	10
Basara (ORBS)	HKNA	10	56

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